

THE HISTORY OF INVESTIGATIONS OF *CHRYSOMELIDAE* SENSU LATO (COLEOPTERA) IN LATVIAN FAUNA

Andris Bukejs

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The history of investigations of leaf-beetles in Latvian fauna is presented in this article. We see the leaf-beetles in a wide sense (*Chrysomelidae* sensu lato), i.e. the families Megalopodidae Latreille, 1802, Orsodacnidae Thomson, 1859 and *Chrysomelidae* Latreille, 1802 (incl. Bruchinae Latreille, 1802). The history of investigation of leaf-beetles in Latvia is more than 220 years old. The first information about leaf-beetles in Latvia can find in the articles of J. B. Fischer (1778, 1784, 1791). The bibliographical list of more than 120 sources is composed.

Key words: Coleoptera, Megalopodidae, Orsodacnidae, *Chrysomelidae*, Bruchinae, Latvia, investigations, history.

Andris Bukejs. Institute of Systematic Biology, Daugavpils University, Vienības Str. 13, Daugavpils, LV-5401, Latvia; andris.bukejs@biology.lv

The leaf-beetles are one of the biggest beetle family in the world fauna (30000 – 50000 species are known) (Bieńkowski 2004; Brovdij 1985; Jolivet 1988; Mohr 1966) and also in the Latvian fauna. However, the special investigation of the history of leaf-beetles in Latvia was not made till now. The analogous works were made about Scolytidae (Šmits 1960), Elateridae (Spuris 1974, 1981), Cantharidae (Melecis 1975), Carabidae (Spuris 1983; Barševskis 2003), Cerambycidae (Spuris 1984), Coccinellidae (Spuris 1990), Scarabaeidae (Spuris 1991) and Dytisciformia (Spuris 1991a; Barševskis, Kalniņš, Cibulskis 2005).

In this article we consider the leaf-beetles in a wide sense (*Chrysomelidae* sensu lato) according to the taxonomy of J. F. Lawrence and A. F. Newton (1995), i.e. the families Megalopodidae Latreille, 1802, Orsodacnidae Thomson, 1859 and

Chrysomelidae Latreille, 1802 (incl. Bruchinae Latreille, 1802).

The aim of our work is to summarize and to analyse the bibliographical data about the leaf-beetles of Latvian fauna, to give the short essay about the history of investigation of leaf-beetles and to make up the bibliographical list.

The first information about the leaf-beetles (*Chrysomelidae* sensu lato) of Latvian fauna was found in the scientific literature in the second half of the 18th century in the articles of J. B. Fischer (1778, 1784, 1791). In the first edition of his monograph (Fischer 1778) about the nature of Livland three species of the leaf-beetles are mentioned. After some additions (Fischer 1784), in the second edition of the monograph (Fischer 1791) 18 species are already mentioned. The

author treats as the leaf-beetles one species – *Chrysomela boleti* L., that in the modern taxonomy is the darkling beetle *Diaperis boleti* L. (Tenebrinoidea) and we don't count this species. To Z. Spuris (1981, 1983) mind, J. B. Fischer has made his investigations in the Riga district.

Johan Groschke, the professor of Jelgava Gymnasium, has started some coleopterological articles in the 19th century. In the review of the Kurzeme (*Curland*) fauna he has made a list of the pested beetles, to his mind, where he has mentioned 8 species of leaf-beetles (Groschke 1805).

In 1818 the first wide catalogue of the beetles of Latvian fauna has been published. There are 725 species mentioned, that were found in the environs of Rīga and Rīga district (in that time it was a large territory including the Rūjiene environs). The author of this catalogue was not mentioned when the catalogue was published, but from other sources (Kawall 1868) is clear that it was the citizen of Rīga K. H. Precht (1818). According to the J. Fabricius system there are 10 genera and 90 species of the leaf-beetles and 1 species of the seed beetles – *Bruchus granarius* (this is the first time that the seed beetles were mentioned in Latvian fauna) Three species (*Crioceris flavipes*, *Clythra quadrimaculata* and *Chrysomela violacea*) in the catalogue are not to determine for certain, but 6 species were mentioned twice with different names (in the modern taxonomy they are synonyms). The material that was in the K. Precht's collection is not remained.

In 1829 the citizen of Jelgava J. G. Fleischer has published a list of beetles of the local fauna (Fleischer 1829). In this list the author has mentioned 640 species, which to his mind were not ascertained in the fauna of the East Baltic. The leaf-beetles are there 55 species, two of them are not determined (*Chrysomela centaurei* F. and *Chrysomela ornata* Ahr.).

In the same year a catalogue of the Livland beetles was published (Gimmerthal 1829), where

can find about 800 species of Coleoptera. As B. Gimmerthal lived in Rīga, can suppose, that his observations were made in Rīga district (Spuris 1981, 1983, 1984). Some names of the species are repeated or are difficult to determine. At the Zoological museum of Latvia University the B. Gimmerthal's collection is remained, that gives a possibility to prove and to clarify this information.

In the publications of fenological observations in Kurzeme (*Curland*) J. H. Kawall (1866, 1866a) has mentioned 10 and 9 species of the leaf-beetles.

At the end of the 19th century the G. Seidlitz's monograph about the fauna of Baltic beetles was published. It's important to know that Baltic States in that time were Estonia and Latvia (without Latgale). This monograph was published in two editions (Seidlitz 1872-1875, 1887-1891). In the monograph we can find keys for determination of families, genera and all species (including also potential species). Unfortunately the localities for species are rarely mentioned there. Sometimes there are directions to Kurzeme (*Curland*), Livland and Rīga or it is mentioned, that in Europe the species is distributed till Kurzeme or Estonia. That's why it is not possible to define the number of species for Latvia and Estonia exactly. For majority of species there is evaluation of occurrence. In the second edition of the monograph (Seidlitz 1887-1891) 206 species of the leaf-beetles are described, but there are concrete localities (Curland, Rīga and other) only for 22 species in Latvia. Z. Spuris (1973) argue away the importance of the G. Seidlitz monograph as the basic work for the fauna of Latvian beetles.

In 1884 the article about the beetles of Poland Lifland was published (Ulanowsky 1884), Latgale (the eastern part of Latvia) belonged to this territory. Should mention, that these faunal data are very inexact and doubtful (Barshevskis 1993). In the lists of beetles families in Latvia published earlier they didn't take account of this publication (Spuris 1981, 1983, 1984, 1991; Barševskis 2003; Barševskis, Kalniņš, Cibulskis 2005).

In this period two small faunal articles (Müthel 1886, 1889) were published, where can find data about eight species of the leaf-beetles.

At the beginning of the 20th century a list of Baltic beetles was published (Rathlef 1905), that was written according to the G. Seidlitz's monograph and other fauna publications of that time. In this list and the supplement (Rathlef 1921) 235 species of Chrysomelidae sensu lato are mentioned.

In the first half of the 20th century some faunal publications were published, where can find some data about the leaf-beetles. For Lielvārde L. Heyden (1903) mentions 19 species of the leaf-beetles. J. Mikutowicz and T. Lackschewitz in their series of publications (Mikutowicz 1905, 1911; Lackschewitz 1927, 1942; Lackschewitz, Mikutowicz 1939) reported 3, 2, 1, 1 and 6 new and rare species of the leaf-beetles, altogether 11 species. In his work L. Brammanis (1930) mentions 9 species of the leaf-beetles, but H. Lindberg (1932) mentions 21 species.

In the second half of the 20th century a lot of publications about the leaf-beetles appear in Latvia. You should pay special attention to V. Pūtele's work about Latvian flea beetles (Alticinae). She was occupied with studying of fauna and ecological aspects of flea beetles (Pūtele 1958, 1958a, 1959, 1968a, 1968b, 1970, 1970c, 1970d, 1971). She reviewed some genera of Alticinae of Latvian fauna: *Phylloterta* Foudr. (Pūtele 1960), *Longitarsus* Latr. (Pūtele 1965), *Psylliodes* Latr. (Pūtele 1968), *Chaetocnema* Steph. (Pūtele 1970a), *Aphthona* Chev. (Pūtele 1970b), *Haltica* Foudr. and *Chalcoides* Steph. (Pūtele 1971a). V. Pūtele has mentioned more than 30 species for Latvia for the first time. However the records of some species mentioned for the local fauna are doubtful (*Aphthona nigriceps* Foudr., *Longitarsus symphyti* Heikertinger, *L. aeruginosus* (Foudr.), *L. echii* (Koch), *Ochrosis ventralis* (Ill.), *Chaetocnema tibialis* Ill., *Ch. breviscula* (Fald.), *Ch. tbesa* (Boield.) and other). The revision of V. Pūtele's collection should be done.

V. F. Palij (1958) has made a review of flea beetles of Latvian fauna. In his publication 18 genera and 81 species of Alticinae are mentioned, he also gives host plants and general distribution for every species.

There are the information about largest families of the beetles of Latvian fauna in the books "Latvian animals" ("*Latvijas dzīvnieki*") and "The world of Latvian animals" ("*Latvijas dzīvnieku pasaule*"). You can find also the common information about the leaf-beetles and seed beetles. There are mentioned 257 species of Chrysomelidae and 6 species of Bruchinae (Šmits, Spuris 1966) and about 270 species of Chrysomelidae and 6 species of Bruchinae (Spuris 1974) for the Latvian fauna.

The large number of publications are dedicated to the investigation of the leaf-beetles as pests of cultivated plants. Z. Čudare (1969) has studied the development cycle and has carried out histological investigations of the Colorado beetle *Leptinotarsa decemlineata* Say. There were investigations dedicated to the study how to fight against these dangerous agricultural pests (Pavasaris 1972). A number of monographs and articles were published, where can find some species of the leaf-beetles as pests (Peņģerots-Svešais 1927; Ozols 1948, 1963, 1973; Danka 1950; Eglītis 1954, 1956, 1956a; Smarods, Liepa 1956; Rupais 1959, 1999; Čakstiņa 1962; Priedītis 1971a, 1971b; Dūks 1976; Rupais, Kalniņa 1979; Ozols 1985).

A. Tomson (1939-1940, 1940) has studied the pests of sugar beet and has reported 14 species of the leaf-beetles. V. Pūtele has published data about pested leaf-beetles for tree cultures in the Slītere National Park (Pūtele 1984), about pested flea beetles for cereals (Pūtele 1975) and review of pested leaf-beetles of Latvian fauna (Pūtele 1982). The pests in the genus *Melasoma* Steph. (= *Chrysomela* L.) are described in the publication (Pūtele 1977).

The development cycles and the biology of some species of the leaf-beetles were described in the

special publications: *Galerucella tanacetii* L. (Ozols 1929), *Galerucella viburni* Pk. (Rupais 1962), *Lochmaea caprea* L. (Pūtele 1976), *Melasoma saliceti* Wse. (Pūtele 1976a), *Agelastica alni* L. (Pūtele 1977a).

While studying the leaf-beetles in the agrocenosis of the apple-tree (Priedītis, Pūtele 1976; Priedītis 1979), there were registered 38 species. V. Pūtele (1974) has established 153 species of the leaf-beetles in the environs of Jelgava, but no concrete localities for collecting these species were mentioned.

The special work about the leaf-beetles in Latvia was published by M. Stiprais (1977). There were mentioned new faunal data about 112 species.

The leaf-beetles are also mentioned in the series of publications about the investigation of beetles of different habitats or Latvian territories. While studying the main habitats of lakes, Z. Spuris (1953) has mentioned the leaf-beetles of genera *Macrolea* Sam. (1 species), *Donacia* F. (12 species), *Donaciella* Rtt. (3 species), *Prasocuris* Latr. (1 species) and *Galarucella* Crotch (3 species). There are faunal data about the leaf-beetles of the Slītere National Park in the 4 publications (Pūtele 1980, 1981, 1981a; Rutenberga 1992), more than 120 species are mentioned there in all.

We can find separate data about the leaf-beetles in some publications (Priedītis 1958; Danka, Stiprais 1972; Cinītis 1975; Stiprais, Varzinska 1985; Barševskis, Savenkovs 1991; Barševskis 1992, 1993a, 1997a; Barševskis, Spuriņš, Oga 1992; Petrova, Čudare, Šteinīte 2000; Barševskis *et al.* 2004; Petrova, Čudare, Cibulskis 2006).

A. Barševskis (1988) has mentioned 64 species of the leaf-beetles, while studying the beetles of south-eastern Latvia (Daugavpils, Krāslava and Preiļi districts) in different habitats.

The monograph “The Beetles of Eastern Latvia” (Barševskis 1993) was published at the end of the 20th century. The author refers to Latvia,

Augšzeme and eastern part of Vidzeme to eastern Latvia. Besides the large amount of faunal data, there is also a review of history of investigations of beetles in eastern Latvia, detailed description of different collecting methods, the ecological review of habitats is made, there are morphological and systematical notes for some groups of beetles. There are 1836 species of beetles in the monograph in all and for every species the concrete localities and habitats are mentioned. According to the fauna this monograph is a valuable work. A. Barševskis has mentioned for eastern Latvia 4 species of Megalopodidae, 1 species of Orsodacnidae and 200 species of Chrysomelidae (including 5 species of Bruchinae). Three species, *Batophila fallax* Wse., *Crepidodera lamina* (Bedel) and *Dibolia timida* (Ill.), which were mentioned for Latvian fauna for the first time were made by misidentifications. We have deleted these species from the list of Latvian beetles (Bukejs 2008d).

In 1997 the first catalogue of Latvian Coleoptera was published (Telnov *et al.* 1997), where 334 species of the leaf-beetles Chrysomelidae sensu lato: Orsodacnidae – 1 species, Megalopodidae – 4 species and Chrysomelidae – 329 species (7 species from them are seed beetles Bruchinae).

In the second edition of the catalogue (Telnov 2004) the number of species of the leaf-beetles are larger – 338: Orsodacnidae - 1 species, Megalopodidae – 4 species and Chrysomelidae – 333 species (9 species from them are seed beetles Bruchinae).

There are 4 species of Megalopodidae, 1 species of Orsodacnidae and 150 species of Chrysomelidae (5 species from them are seed beetles Bruchinae) in the list of the beetles of the Silene Nature park (Barševskis *et al.* 2002). Additionally to this list 5 species of Chrysomelidae are mentioned (Barševskis *et al.* 2007).

A. Bukejs has established 2 species of seed beetles Bruchinae (Bukejs 2006), 1 species of Megalopodidae and 87 species of Chrysomelidae (Bukejs, Telnov 2007), while studying the fauna of

beetles of Naujene rural municipality (south-eastern Latvia).

In theses of different conferences can find some information about Latvian leaf-beetles (Princovs 2000; Valainis 2007; Bukejs 2008, 2008c).

A lot of authors mention some rare and/or new species of Latvian leaf-beetles and seed beetles in their publications (Šmits 1962; Barševskis, Savenkovs 1992; Barševskis 1996, 1997, 2001; Telnov 1996, 1997, 2001, 2002; Cinītis 1997; Leiskina 1999, 2000; Telnov, Kalniņš 2002; Telnov et al. 2005, 2006, 2007; Bukejs 2008a, 2008b).

Extensive faunal data about some subfamilies of the leaf-beetles are found in 2 recent publications. The faunal data about 19 species of Donaciinea Kirby are published in the article (Valainis et al. 2007). In the publication (Bukejs in press) new faunal data about 14 species from subfamilies Criocerinae Latr. and Clytrinae Kirby are presented.

In the last years a number of articles about review of some taxons of the leaf-beetles of Latvian fauna were published: Cryptocephalinae Gyll. (Bukejs, Barševskis, Valainis 2007), *Chaetocnema* Steph. (Bukejs 2008e), *Phyllotreta* Chev. (Bukejs 2008f).

The author of this publication is studying the fauna, the taxonomy and the biogeography of the Latvian leaf-beetles at the moment.

In Latvian fauna four species of Megalopodidae, one species of Orsodacnidae and 333 species of Chrysomelidae (10 from them are Bruchinae) are known now. We are going to continue our study of the leaf-beetles.

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